

U151F AUTOMATIC TRANSMISSION

SERVICE DATA

Automatic Transaxle Assembly

Line pressure (Wheel locked) AT stall (Throttle valve fully opened)	D position	931 to 1,031 kPa (9.1 to 10.5 kgf*cm ² , 129 to 149 psi)
	R position	1,768 to 1,968 kPa (18.0 to 20.0 kgf/cm ² , 284 to 256 psi)
Engine stall revolution	D positions	2,030 to 2,330 rpm
Time lag	N → D position	Less than 1.2 seconds
	N → R position	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N position	600 to 700 rpm
Drive plate runout	Maximum.	0.20 mm (0.0079 in.)
Differential side oil seal depth		0 +0.5 mm (0 +0.020 in.)
Shift point		
D position (Throttle valve fully opened)	1 → 2	50 to 58 km/h (31 to 36 mph)
	2 → 3	99 to 108 km/h (62 to 67 mph)
	3 → 4	161 to 176 km/h (100 to 109 mph)
	4 → 5	239 to 257 km/h (149 to 160 mph)
	5 → 4	230 to 247 km/h (143 to 153 mph)
	4 → 3	154 to 169 km/h (96 to 105 mph)
	3 → 2	94 to 102 km/h (58 to 63 mph)
	2 → 1	35 to 42 km/h (22 to 26 mph)
D position (Throttle valve fully closed)	4 → 5	68 to 75 km/h (42 to 47 mph)
	5 → 4	40 to 47 km/h (25 to 29 mph)
3 position (Throttle valve fully opened)	1 → 2	50 to 58 km/h (31 to 36 mph)
	2 → 3	99 to 108 km/h (62 to 67 mph)
	4 → 3	154 to 169 km/h (96 to 105 mph)
	3 → 2	94 to 102 km/h (58 to 63 mph)
	2 → 1	35 to 42 km/h (22 to 26 mph)
2 position (Throttle valve fully opened)	1 → 2	50 to 58 km/h (31 to 36 mph)
	3 → 2	94 to 102 km/h (58 to 63 mph)
	2 → 1	35 to 42 km/h (22 to 26 mph)
L position (Throttle valve fully opened)	2 → 1	35 to 42 km/h (22 to 26 mph)
Lock-up point		
D position (Throttle valve opening 5 %)	Lock-up ON 5 → 5L	66 to 74 km/h (41 to 46 mph)
	Lock-up OFF 5L → 5	64 to 72 km/h (40 to 45 mph)
	Lock-up ON 4 → 4L	106 to 116 km/h (66 to 72 mph)
	Lock-up OFF 4L → 4	103 to 112 km/h (64 to 70 mph)
	Lock-up ON 3 → 3L	64 to 73 km/h (40 to 45 mph)
	Lock-up OFF 3L → 3	62 to 70 km/h (39 to 43 mph)
Input shaft		
End play		0.262 to 1.244 mm (0.0103 to 0.0490 in.)

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Multiple disc clutch clutch hub		
Inside diameter	STD	23.03 to 23.05 mm (0.9067 to 0.9075 in.)
	Max.	23.09 mm (0.9091 in.)
Underdrive brake		
Return spring free length	13.24 mm (0.5213 in.)	
Pack clearance	1.81 to 2.20 mm (0.0713 to 0.0866 in.)	
Flange thickness	Mark 1	3.0 mm (0.118 in.)
	Mark 2	3.2 mm (0.126 in.)
	Mark 3	3.4 mm (0.134 in.)
	Mark 4	3.1 mm (0.122 in.)
	Mark 5	3.3 mm (0.130 in.)
2nd brake		
Pack clearance	0.62 to 0.91 mm (0.0244 to 0.0358 in.)	
Return spring free length	16.61 mm (0.6539 in.)	
Flange thickness	Mark 1	3.0 mm (0.118 in.)
	Mark 2	3.1 mm (0.122 in.)
	Mark 3	3.2 mm (0.126 in.)
	Mark 4	3.3 mm (0.130 in.)
	Mark 5	3.4 mm (0.134 in.)
	Mark 6	3.5 mm (0.138 in.)
	Mark 7	3.6 mm (0.142 in.)
1st and reverse brake		
Pack clearance	1.16 to 1.35 mm (0.0457 to 0.0531 in.)	
Return spring free length	17.61 mm (0.6933 in.)	
Flange thickness	Mark 1	1.8 mm (0.071 in.)
	Mark 2	1.9 mm (0.075 in.)
	Mark 3	2.0 mm (0.079 in.)
	Mark 4	2.1 mm (0.083 in.)
	Mark 5	2.2 mm (0.087 in.)
	Mark 6	2.3 mm (0.091 in.)
	Mark 7	2.4 mm (0.094 in.)
	Mark 8	2.5 mm (0.098 in.)

OIL PUMP

Body clearance	STD	0.10 to 0.17 mm (0.0039 to 0.0067 in.)
	Max.	0.17 mm (0.0067 in.)
Tip clearance	STD	0.07 to 0.15 mm (0.0028 to 0.0059 in.)
	Max.	0.15 mm (0.0059 in.)
Side clearance	STD	0.02 to 0.05 mm (0.0008 to 0.0020 in.)
	Max.	0.05 mm (0.0020 in.)
Drive gear thickness	Mark A	11.690 to 11.699 mm (0.4602 to 0.4606 in.)
	Mark B	11.700 to 11.709 mm (0.4606 to 0.4610 in.)
	Mark C	11.710 to 11.720 mm (0.4610 to 0.4614 in.)
	Mark D	11.721 to 11.730 mm (0.4615 to 0.4618 in.)
	Mark E	11.731 to 11.740 mm (0.4619 to 0.4622 in.)

Driven gear thickness	Mark A	11.690 to 11.699 mm (0.4602 to 0.4606 in.)
	Mark B	11.700 to 11.709 mm (0.4606 to 0.4610 in.)
	Mark C	11.710 to 11.720 mm (0.4610 to 0.4614 in.)
	Mark D	11.721 to 11.730 mm (0.4615 to 0.4618 in.)
	Mark E	11.731 to 11.740 mm (0.4619 to 0.4622 in.)
Pump body bushing inside diameter	STD	38.113 to 38.138 mm (1.5005 to 1.5015 in.)
	Max.	38.188 mm (1.5035 in.)
Stator shaft bushing inside diameter	STD	21.500 to 21.526 mm (0.8465 to 0.8475 in.)
	Max	21.57 mm (0.8492 in.)

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SECOND BRAKE PISTON

Piston return spring free length	16.61 mm (0.6539 in.)
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FORWARD CLUTCH

Pack clearance	1.00 to 1.25 mm (0.0394 to 0.4921 in.)	
Piston return spring free length	26.74 mm (1.0528 in.)	
Flange thickness	No. 1	3.00 mm (0.1181 in.)
	No. 2	3.15 mm (0.1240 in.)
	No. 3	3.30 mm (0.1299 in.)
	No. 4	3.45 mm (0.1358 in.)
	No. 5	3.60 mm (0.1417 in.)

DIRECT CLUTCH

Pack clearance	0.61 to 0.83 mm (0.0240 to 0.0327 in.)	
Piston return spring free length	25.91 mm (1.0201 in.)	
Flange thickness (Direct clutch)	Mark 1	3.0 mm (0.118 in.)
	Mark 2	3.1 mm (0.122 in.)
	Mark 3	3.2 mm (0.126 in.)
	Mark 4	3.3 mm (0.130 in.)
	Mark 5	3.4 mm (0.134 in.)
	Mark 6	3.5 mm (0.138 in.)
	Mark 7	3.6 mm (0.142 in.)

UNDERDRIVE PLANETARY GEAR

Turning torque (at 60 rpm)	0.50 to 1.42 N*m (5.1 to 14.5 kgf*cm, 4.4 to 12.6 in.*lbf)
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UNDERDRIVE CLUTCH

Pack clearance	1.51 to 1.71 mm (0.0594 to 0.0673 in.)	
Piston return spring free length	17.14 mm (0.6752 in.)	
Flange thickness (Underdrive clutch))	Mark 1	3.0 mm (0.118 in.)
	Mark 2	3.2 mm (0.126 in.)
	Mark 3	3.4 mm (0.134 in.)
	Mark 3	3.6 mm (0.122 in.)
	Mark 3	3.8 mm (0.130 in.)
Underdrive clutch drum bushing inside diameter	STD	37.06 to 37.08 mm (1.4591 to 1.4598 in.)
	Max.	37.13 mm (1.4618 in.)

TRANSMISSION VALVE BODY ASSEMBLY

Valve body assembly installation bolt length	25 mm (0.984 in.) for bolt A
	57.0 mm (2.244 in.) for bolt B
	41 mm (1.614 in.) for bolt C
Detente spring installation bolt length	27 mm (1.063 in.) for bolt A
	16 mm (0.630 in.) for bolt B

DIFFERENTIAL

Side gear backlash	0.05 to 0.20 mm (0.0020 to 0.0079 in.)	
Thrust washer thickness	Mark -	1.625 mm (0.0640 in.)
	Mark -	1.725 mm (0.0679 in.)
	Mark -	1.825 mm (0.0719 in.)
Preload (turning torque at 60 rpm))	New bearing	0.20 to 0.69 N*m (2.0 to 7.0 kgf*cm, 1.8 to 6.1 in.*lbf)
	Using bearing	0.10 to 0.35 N*m (1.0 to 3.6 kgf*cm, 0.9 to 3.1 in.*lbf)
Shim thickness	Mark 0	2.00 mm (0.0787 in.)
	Mark 1	2.05 mm (0.0807 in.)
	Mark 2	2.10 mm (0.0827 in.)
	Mark 3	2.15 mm (0.0846 in.)
	Mark 4	2.20 mm (0.0866 in.)
	Mark 5	2.25 mm (0.0886 in.)
	Mark 6	2.30 mm (0.0906 in.)
	Mark 7	2.35 mm (0.0925 in.)
	Mark 8	2.40 mm (0.0945 in.)
	Mark 9	2.45 mm (0.0965 in.)
	Mark A	2.50 mm (0.0984 in.)
	Mark B	2.55 mm (0.1004 in.)
	Mark C	2.60 mm (0.1024 in.)
	Mark D	2.65 mm (0.1043 in.)
	Mark E	2.70 mm (0.1063 in.)
	Mark F	2.75 mm (0.1083 in.)
	Mark G	2.80 mm (0.1102 in.)
	Mark H	2.85 mm (0.1122 in.)
	Mark J	2.025 mm (0.07972 in.)
	Mark K	2.075 mm (0.08169 in.)
	Mark L	2.125 mm (0.08366 in.)
	Mark M	2.175 mm (0.08563 in.)
	Mark N	2.225 mm (0.08760 in.)
	Mark P	2.275 mm (0.08957 in.)
	Mark Q	2.325 mm (0.09154 in.)
	Mark R	2.375 mm (0.09350 in.)
	Mark S	2.425 mm (0.09547 in.)
	Mark T	2.475 mm (0.09744 in.)
	Mark U	2.525 mm (0.09941 in.)
	Mark V	2.575 mm (0.10138 in.)
	Mark W	2.625 mm (0.10335 in.)
	Mark X	2.675 mm (0.10531 in.)
	Mark Y	2.725 mm (0.10728 in.)
	Mark AA	2.775 mm (0.10925 in.)
	Mark AB	2.825 mm (0.11122 in.)

TORQUE SPECIFICATIONS

Automatic Transaxle Assembly

Part Tightened		N*m	kgf*cm	ft*lbf
Park/neutral position switch	Nut	6.9	70	61 in.*lbf
	Bolt	5.4	55	48 in.*lbf
Control shaft lever x Control shaft		13	133	10
Shift control cable x Control shaft lever		15	153	11
Transaxle housing x Engine block	Upper side bolt	64	653	47
	Lower side bolt A	37	377	27
	Lower side bolt B	46	470	34
Torque converter clutch x Drive plate		41	418	30
Flywheel housing under cover x Automatic transaxle		7.8	80	69 in.*lbf
Front engine mounting bracket x Transaxle		64	653	47
Rear engine mounting bracket x Transaxle		45	459	33
Engine mounting bracket LH x Transaxle		64	653	47
Oil filler tube x Transaxle		5.5	56	49 in.*lbf
Oil filler tube x Front engine mounting bracket				
Control cable bracket No. 1 x Transaxle		12	122	9
Control cable bracket No. 2 x Transaxle		12	122	9
Oil cooler inlet elbow x Transaxle		27	276	20
Oil cooler outlet elbow x Transaxle		27	276	20
Starter x Transaxle		37	377	27
Starter wire x Starter		9.8	100	88 in.*lbf
Speed sensor (NC) x Transaxle		11	112	8
Speed sensor (NT) x Transaxle		11	112	8
Drain plug x Oil pan		47	479	35
Transmission wire x Transaxle		5.4	55	48 in.*lbf
ATF temperature sensor x Valve body		6.6	67	58 in.*lbf
Oil pan x Transaxle		7.8	80	69 in.*lbf
Solenoid valve x Valve body	SL2, DSL, S4	11	110	8
	SL1, SL3	6.6	67	58 in.*lbf
Valve body x Transaxle		11	112	8
Oil strainer x Valve body		11	112	8
Floor shift assembly x Body		12	122	9
Control cable clamp x Engine mounting insulator		12	122	9
Differential gear lube apply tube x Transaxle housing		9.8	100	87 in.*lbf
Front planetary gear lock nut		280	3,355	207
Brake apply tube clamp x Transaxle case		5.4	55	48 in.*lbf
Transaxle case No. 1 plug x Transaxle rear cover		7.4	75	65 in.*lbf
Transaxle rear cover x Transaxle case	Bolt A	19	194	14
	Other bolt	25	255	18
Parking lock pawl shaft x Transaxle case		9.8	100	87 in.*lbf
Oil pump assembly x Transaxle case		22	226	16
Transaxle housing x Transaxle case	Bolt A	22	254	16
	Bolt B	29	295	21
	Bolt C	29	295	21
	Bolt D	22	254	16
Automatic transmission case plug x Transaxle housing		7.4	75	65 in.*lbf

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Part Tightened		N*m	kgf*cm	ft*lbf
Automatic transmission case plug x Transaxle case		7.4	75	65 in.*lbf
Parking lock pawl bracket x Transaxle case		20	205	15
Manual detent spring x Transaxle case	Bolt A	20	205	15
	Bolt B	12	120	9
Automatic transaxle oil pan sub-assembly x Transaxle case		7.6	77	67 in.*lbf
Speed sensor x Transaxle case		11	112	8
Park/neutral start switch x Control shaft lever		13	130	9
Speedometer driven hole cover sub-assembly x Transaxle case		5.5	56	49 in.*lbf
Oil pump body x Stator shaft assembly		9.8	100	87 in.*lbf
Front differential case x Front differential ring gear		95	969	70